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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/849,870	05/04/2001	Chung K. Chu	G25-063	1452
7590 04/20/2004 COLEMAN SUDOL SAPONE, P.C. 714 COLORADO AVENUE			EXAMINER	
			LEWIS, PATRICK T	
BRIDGEPORT, CT 06605			ART UNIT	PAPER NUMBER
			1623	
			DATE MAILED: 04/20/2004	4

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
	09/849,870	CHU ET AL.
Office Action Summary	Examiner	Art Unit
	Patrick T. Lewis	1623
The MAILING DATE of this communication Period for Reply	appears on the cover sheet wi	ith the correspondence address
A SHORTENED STATUTORY PERIOD FOR RITHE MAILING DATE OF THIS COMMUNICATION Extensions of time may be available under the provisions of 37 CF after SIX (6) MONTHS from the mailing date of this communication. If the period for reply specified above is less than thirty (30) days, If NO period for reply is specified above, the maximum statutory provided to reply within the set or extended period for reply will, by some Any reply received by the Office later than three months after the rearned patent term adjustment. See 37 CFR 1.704(b).	DN. R 1.136(a). In no event, however, may a r n. a reply within the statutory minimum of thirt eriod will apply and will expire SIX (6) MON tatute, cause the application to become AB	reply be timely filed ty (30) days will be considered timely. ITHS from the mailing date of this communication. 3ANDONED (35 U.S.C. & 133)
Status		
 1) Responsive to communication(s) filed on <u>0</u> 2a) This action is FINAL. 2b) Since this application is in condition for allocation accordance with the practice under the practice under the practice under the practice. 	This action is non-final. Dwance except for formal matte	
Disposition of Claims		
4) ☐ Claim(s) 1 and 24-31 is/are pending in the 4a) Of the above claim(s) is/are with 5) ☐ Claim(s) is/are allowed. 6) ☐ Claim(s) 1 and 24-31 is/are rejected. 7) ☐ Claim(s) is/are objected to. 8) ☐ Claim(s) are subject to restriction are	drawn from consideration.	
Application Papers	•	
9) The specification is objected to by the Exam 10) The drawing(s) filed on is/are: a) Applicant may not request that any objection to Replacement drawing sheet(s) including the col 11) The oath or declaration is objected to by the	accepted or b) objected to be the drawing(s) be held in abeyand rection is required if the drawing(ce. See 37 CFR 1.85(a). s) is objected to. See 37 CFR 1.121(d).
Priority under 35 U.S.C. § 119		
12) Acknowledgment is made of a claim for fore a) All b) Some * c) None of: 1. Certified copies of the priority documed 2. Certified copies of the priority documed 3. Copies of the certified copies of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the International But * See the attached detailed Office action for a second content of the priority documed application from the priority documed attached detailed Off	nents have been received. Idents have been received in Appriority documents have been reau (PCT Rule 17.2(a)).	oplication No received in this National Stage
Attachment(s)		
Notice of References Cited (PTO-892) Notice of Draftsperson's Patent Drawing Review (PTO-948) Information Disclosure Statement(s) (PTO-1449 or PTO/SB. Paper No(s)/Mail Date	Paper No(s)	ummary (PTO-413))/Mail Date formal Patent Application (PTO-152)

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DETAILED ACTION

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Election/Restrictions

1. Applicant's election with traverse of Group I, wherein the azide group occurs in place of an amino moiety (Species 1) and wherein the azide derivative is a purine (Species 2), in Paper No. 9 dated March 11, 2003, is acknowledged.

Applicant's Response dated February 2, 2004

- 2. In the Response filed February 2, 2004, claim 1 was amended; claims 2-23 were canceled; and claims 24-31 were added.
- 3. Claims 1 and 24-31 are pending. An action on the merits of claims 1 and 24-31 is contained herein below.
- 4. The rejection of claims 1, 7, and 13 under 35 U.S.C. 112, second paragraph, has been rendered moot in view of applicant's amendment dated February 2, 2004.

Claim Rejections - 35 USC § 112

- 5. The following is a quotation of the first paragraph of 35 U.S.C. 112:
 - The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall' set forth the best mode contemplated by the inventor of carrying out his invention.
- 6. Claims 1, 24-29, and 31 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a composition of an azide derivative of a biologically active therapeutic purine nucleoside or purine nucleotide wherein said

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azide group occurs at the 6-position on the purine base of said purine nucleoside or nucleotide in place of an amino moiety, does not reasonably provide enablement for 1) azide derivatives wherein the azide moiety is not at the 6-position of the purine base or 2) azide derivatives wherein the moiety at the 9-position of the purine ring is not a nucleoside or nucleotide. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

A disclosure in an application, to be complete, must contain such description and details as to enable any person skilled in the art or science to which it pertains to make and use the invention as of its filing date, *In re Glass*, 181 USPQ 31; 492 F2.d 1228 (CCPA 1974).

The instant specification invites the skilled artisan to experiment. The factors which must be considered in determining undue experimentation are set forth in *In re Wands*, 8 USPQ2d 1400. The factors include: 1) quantity of experimentation necessary, 2) the amount of guidance presented, 3) the presence or absence of working examples, 4) the nature of the invention, 5) the state of the prior art, 6) the predictability of the art, and 7) the breadth of the claims.

The instant specification is drawn to azide derivatives of pharmaceutically active compounds. Azide derivatives of the instant invention lack support wherein applicants fail to provide a written description which teaches how to make said azide derivatives. While the prior art setting may be mentioned in general terms, the essential novelty, the essence of the invention, must be described in such details, including proportions and

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techniques where necessary, as to enable those persons skilled in the art to make and utilize the invention. A broad claim requires a correlatively broad and sufficient disclosure to support it. Presently, the examples in the instant specification are limited to the preparation of the azide derivative of cordycepin, FAAddP and FMAddA (2'-F-araddl azide prodrugs) and respective biological activities. Applicants do not provide an adequate written description which provides guidance for the preparation of azide derivatives of purine compounds wherein the azide moiety is not at the 6-position. Applicants do not provide an adequate written description which provides guidance for the preparation of azide derivatives wherein the moiety at the 9-position of the purine base is not a nucleoside or nucleotide; more specifically, applicants do not teach the preparation of compounds wherein a dioxolane moiety is at the 9-position of the purine base. Additionally, enzymes are very selective in terms of activity. One of ordinary skill in the art would not predict that a specific enzyme or class of enzymes would convert azide derivatives as broadly claimed into their respective active forms. Examples and description should be of sufficient scope as to justify the scope of the claims. Where the constitution and formula of a chemical compound is stated only as a probability or speculation, the disclosure is not sufficient to support claims identifying the compound by such composition or formula. A disclosure involving a new chemical compound or composition must teach persons skilled in the art how to make the compound. The process is considered to be incomplete wherein applicants set forth the preparation of compounds wherein various moieties are left undefined in full, clear and exact terms.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 29-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The variable R^2 reads upon a "dangling valence" when R^2 is O. The incorporation of said "dangling valence" renders claims 29-31 indefinite as it is seen to affect the effective character of the nucleus.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 10. Claims 1 and 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Bauman et al. U.S. 5,180,824 (Bauman).

Bauman discloses the utilization of 6-azido-2-fluorpurine as an intermediate for the synthesis of fludarabine, fludarabine phosphate and related nucleoside pharmacological agents (Abstract). Bauman's disclosure of 6-azido-2-fluorpurine (compound 3) and its corresponding nucleoside (compound 5) anticipates the instantly claimed purine compounds (columns 3-4). Bauman further discloses the reduction of the azide to an amine.

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Claim Rejections - 35 USC § 103

- 11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
- 13. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
 - 1. Determining the scope and contents of the prior art.
 - 2. Ascertaining the differences between the prior art and the claims at issue.
 - 3. Resolving the level of ordinary skill in the pertinent art.
 - 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- 14. Claims 1 and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman et al. U.S. 5,180,824 (Bauman) in combination with Gmeiner et al. US 5,457,187 (Gmeiner).

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Claims 1 and 24-28 are drawn to a pharmaceutical composition comprising an azide derivative of a biologically active therapeutic purine nucleoside, purine nucleotide or other purine compound wherein said azide group occurs on the purine base in place of an amino moiety.

Bauman teaches the utilization of 6-azido-2-fluorpurine as an intermediate for the synthesis of fludarabine, fludarabine phosphate and related nucleoside pharmacological agents (Abstract). Bauman's teaching of 6-azido-2-fluorpurine (compound 3) and its corresponding nucleoside (compound 5) are embraced by the instantly claimed purine compounds (columns 3-4). Bauman further teaches the reduction of the azide to an amine.

Bauman differs from the instantly claimed invention in that Bauman does not explicitly teach azido-containing purine nucleotides; however, the conversion of the nucleoside compound into the corresponding nucleotide is routine in the art and seen to be well within the purview of one of ordinary skill in the art at the time of the invention.

Gmeiner teaches the delivery of nucleosides as homo-oligomeric nucleotides confers several distinct advantages relative to their delivery as nucleoside bases, nucleosides, or analogues resulting in a significant reduction of the dose required for a positive biological response and a reduction of dose-dependent toxic side-effects (column 3, lines 7-32).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the azido-nucleoside derivatives of Bauman as their corresponding nucleotides or oligonucleotides as Gmeiner teaches that there are several advantages

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for doing so. Based on the teachings of Gmeiner, one of ordinary skill in the art at the

time of the invention would have sufficient motivation and a reasonable expectation of

success in converting the nucleoside compounds of Bauman into their corresponding

nucleotides.

Conclusion

Claims 1 and 24-31 are pending. Claims 1 and 24-31 are rejected. No claims 15.

are allowed.

Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick T. Lewis whose telephone number is 571-272-0655. The examiner can normally be reached on M-F 10:00 am to 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson can be reached on 571-272-0661. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick T. Lewis, PhD Examiner Art Unit 1623 James O. Wilson Supervisory Patent Examiner Technology Center 1600

ptl April 14, 2004